

Multicenter Surveillance of Prevalence of the 23S rRNA A2058G Point Mutation and Molecular Subtypes in *Treponema pallidum* in Taiwan, 2009 to 2014.

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Objectives

1. While azithromycin at a single, 2-gram dose has been shown in clinical trials to be bioequivalent to benzathine penicillin in the treatment of early syphilis (primary, secondary, or early latent syphilis), the findings that *Treponema pallidum* exhibiting A2058G or A2059G mutation on 23S ribosomal RNA (rRNA) is increasingly reported worldwide has caused concerns.
2. In this surveillance study, we aimed to assess the trends of macrolide-resistant *T. pallidum* identified from patients with early syphilis in Taiwan.

Materials & Methods

1. Between September 2009 and July 2014, a surveillance study for macrolide-resistant *T. pallidum* was conducted at eight designated hospitals for HIV care around Taiwan.
2. By following the typing system proposed by Marra and colleagues for *T. pallidum* isolates, we examined the number of 60-bp repeats in the acidic repeat protein (*arp*) gene, *T. pallidum* repeat (*tpr*) polymorphism, and *tp0548* gene.
3. Detection of A2058G point mutation of 23S rRNA of *T. pallidum* was performed using restriction fragment length polymorphism (RFLP).

Results

1. We collected 845 clinical specimens from 469 patients with syphilis. *T. pallidum* DNA was identified from 43.7% (n=369) of the clinical specimens that were collected from 255 patients (54.4%).

Figure 1. Surveillance study for macrolide resistance and genotyping of *Treponema pallidum*.

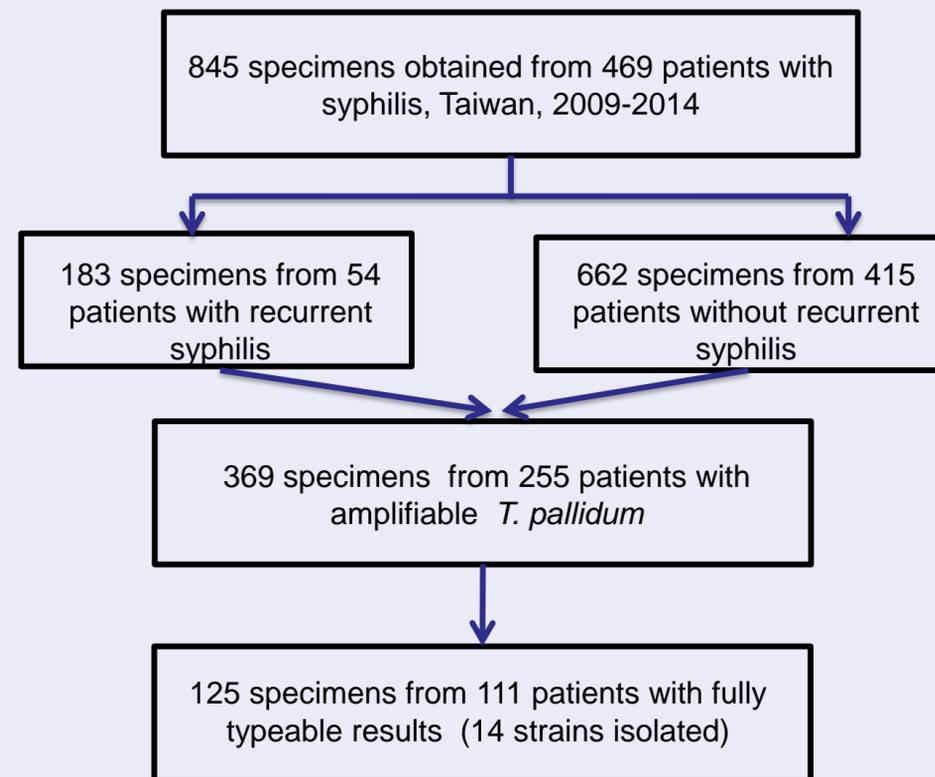
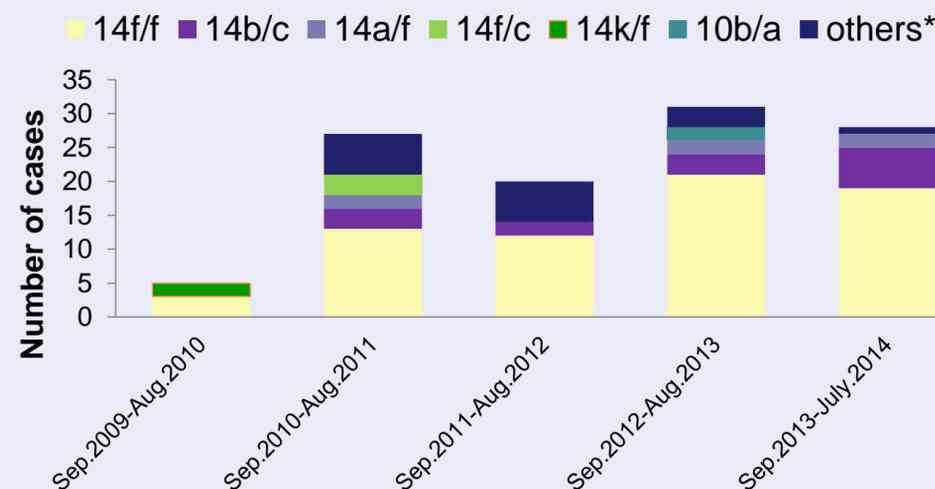
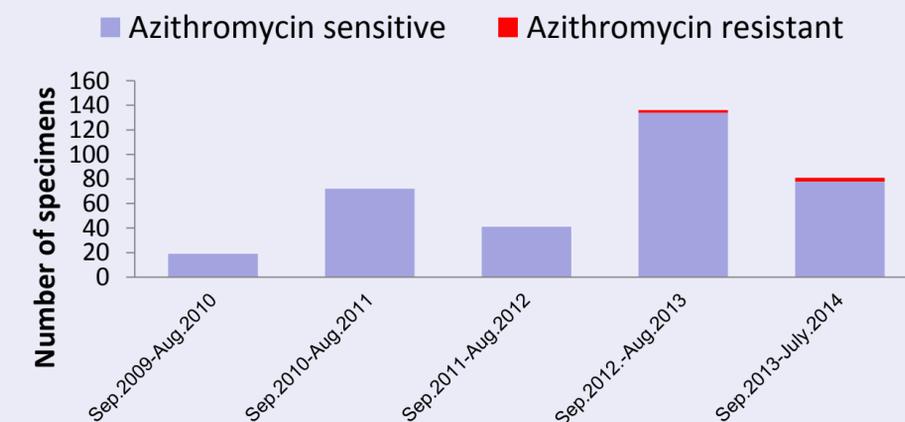


Figure 2. Distribution of the *T. pallidum* strains in Taiwan



2. 349 clinical specimens that were tested positive for 23S rRNA and examined for macrolide resistance and 5 isolates (1.4%) had A2058G mutation on 23S rRNA.
3. The prevalence of macrolide-resistant *T. pallidum* increased from 0% in the first 3 years of surveillance to 1.5% (2/136) in 2013 and 3.7% (3/81) in 2014. 125 of the 369 isolates (33.9%) were completely typeable.
4. Type 14f/f (n=68 isolates; 61.2%) was the most common isolates, followed by 14b/c (14; 12.6%), 14a/f (6; 5.4%), 14k/f (5; 4.5%), 10b/a (3; 2.7%), 14b/f (3; 2.7%), and others.

Figure 3. Prevalence of macrolide resistance mutation



Conclusions

1. Subtype 14f/f is the most common *T. pallidum* strain in this multicenter study on syphilis in Taiwan.
2. While the prevalence of *T. pallidum* that exhibits A2058G mutation on 23S rRNA remains low in Taiwan, the increasing detection of macrolide-resistant *T. pallidum* warrants continued surveillance.

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